WHAT IS CLAIMED IS:

1. A disposable cartridge for mounting on a blood pump system comprising:

a. a blood passage through which flows blood withdrawn from a blood vessel from a patient, and

b. an electronic pressure sensor mounted on the cartridge, where the pressure sensor is arranged to sense a pressure in the blood flow through the blood passage of the cartridge and outputs an electrical signal indicative of the pressure.

2. A cartridge as in claim 1 wherein an electrical signal is a voltage level indicative of the pressure.

3. A cartridge as in claim 1 further comprising a blood filter coupled to the blood passage, and the blood passage further includes a blood return line to return blood to the patient.

4. A cartridge as in claim 3 further comprising a filtered fluid passage extending from the filter, and a second pressure sensor in the filtered fluid passages sensing a pressure of filtered fluid flowing through the filtered fluid passage.

5. A cartridge as in claim 1 further comprising pressure sensor housing for the pressure sensor, where the housing includes a smooth tubular channel contiguous with the blood passage and the pressure sensor is mounted flush with a wall of the channel.

6. A cartridge as in claim 1 where the sensor is integrated into the housing of a hemofilter.

7. A cartridge as in claim 1, where the pressure sensor and a pump coupling loop of the blood passage are mounted on the cartridge and the cartridge that detachably attaches to a pump console.

8. An integrated disposable cartridge as in claim 7 where the blood passage is formed of transparent material so that the blood flow is visible.

9. A cartridge as in claim 7 wherein the cartridge is disposed of after treatment of the patient.

10. A cartridge as in claim 3 wherein the filter is of a group consisting of a hemodialyzer, hemofilter or hemoconcentrator, and the filter includes an integral pressure sensor embedded in a blood passage wall of the filter.

11. A cartridge in claim 10 where the pressure sensor is in fluid contact with the blood.

12 A cartridge as in claim 4 where the second pressure sensor is embedded in the filter and is in fluid contact with the filtered fluid.

13. A cartridge as claim 1 wherein the pressure sensor is sealed in a pressure sensor housing form of a biocompatible and flexible material.

14. A cartridge as in claim 1 wherein the pressure sensor includes a pressure responsive diaphragm exposed to the blood flow and a mechanical-to-electric transducer coupled to the diaphragm and having an electrical signal output indicative of the pressure of the blood.

15. A cartridge as in claim 14 wherein the mechanical-to-electric transducer includes a strain gain bridge or capacitive element to convert displacement of the diaphragm to said electrical signal.

16. A disposable extracorporal blood circuit for processing blood from a mammal comprising:

a blood passage having a blood withdrawal port connectable to a first peripheral blood vessel of the mammal, a blood return port connectable to a second peripheral blood vessel of the patient, and a blood passage between the withdrawal port and the return port through which blood flows wherein the blood passage has a smooth and continuous wall throughout the passage;

a pressure sensor having a fluid passage with a fluid inlet and/or outlet coupled to said blood passage, and a fluid pressure responsive element flush with a wall of the fluid passage, and

a blood filter having a blood inlet and a blood outlet both coupled to said blood passage such that the blood flows through said filter.

17. A disposable extracorporal blood circuit as in claim 16 wherein said blood passage includes a tubular withdrawal line connectable to a first catheter inserted into the first peripheral blood vessel, and to said pressure sensor, a tubular blood circuit line connecting the pressure sensor and the blood inlet of the filter, and a tubular return line connected to the blood outlet of the filter and connectable to a catheter inserted in said second peripheral blood vessel.

18. A disposable extracorporal blood circuit as in claim 17 wherein the tubular blood circuit line is connectable to a roller blood pump.

19. A disposable extracorporal blood circuit as in claim 16 wherein the first and second peripheral blood vessels are the same blood vessel.